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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,242	01/19/2001	George Wong	CS98-070B	8930

7590

12/05/2001

George O. Saile
20 McIntosh Drive
Poughkeepsie, NY 12603

EXAMINER

DIAZ, JOSE R

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 12/05/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/764,242

Applicant(s)

WONG, GEORGE

Examiner

José R. Díaz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 18-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 18-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6) ☐ Other:

DETAILED ACTION

Specification

➤ The abstract of the disclosure is objected to because the abstract has more than 150 words. Correction is required. See MPEP § 608.01(b).

➤ The disclosure is objected to because of the following informalities: the phrase "now Pat. 6,211,050 B1," should be included in the preliminary amendment, after "... serial number 09261,681, filing date 3/3/99," Appropriate correction is required.

Drawings

➤ The drawings are objected to because Figures 1-2 are new drawings, which were not presented in the disclosure of the parent application. Applicant is reminded that a later application for a distinct or independent invention, carved out of a pending application and disclosing and claiming **only subject matter disclosed in an earlier or parent application** is known as a divisional application or "division." The divisional application should set forth only that portion of the earlier disclosure which is germane to the invention as claimed in the divisional application (see MPEP 201.06).

Claim Rejections - 35 USC § 112

➤ The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

➤ Claims 18-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding the last limitation claimed on claim 18, it

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is not clear what structure does Applicant intend to claim. Does the claimed structure comprise only the limitations described on (a) through (c) or includes a second structure define by the steps (a)-(c) over "each additional patterned conductive layer". Clarification is required. Claims 19-22 are rejected due to their dependency on claim 18.

Claim Rejections - 35 USC § 103

➤ The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

➤ Claims 18-20 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lou (US Patent No. 5,759,906).

Regarding claim 18, Lou teaches a device (see col. 1-12) comprised of: a patterned conductive layer (16) and a patterned fill layer (16); a spin-on-glass layer (20); and an insulating layer (22) (see Figure 6). Regarding the limitations of step (b), the claim(s) contain method of making characteristics given no patentable weight in determining patentability of the final device structure. Note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); In re Marosi et al, 218 USPQ 289; and particularly In re Thorpe, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process,

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and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding the limitation wherein (a) through (c) are repeated, it would have been obvious to one having ordinary skill in the art at the time the invention was made to duplicate the structure of Lou since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Regarding claims 19-20, Lou teaches that the conductive layer is aluminum having a thickness of about 6000 angstroms (see col. 5, lines 34-39).

Regarding claim 22, Lou teaches a features size of about 0.35 μm (see Figure 1). However, Lou does not teach a width of between about 120-600 μm . It would have been obvious to one having ordinary skill in the art at the time of the invention was made to form kerf areas having a width of between about 120-600 μm , since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

➤ Claims 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lou (US Patent No. 5,759,906) in view of Tran (US Patent No. 6,008,116).

Regarding claim 21, Lou does not teach a spacing of not greater than about 2 μm . However, Tran teaches that is well known in the art to form metal lines having an interwiring spacing of about 0.375 μm and filled with SOG (see col. 4, lines 49-53). Therefore, it would have been obvious to one having ordinary skill in the art at the same

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time the invention was made to modify Lou to include metal lines having an interwiring spacing of about 0.375 μm . The ordinary artisan would have been motivated to modify Lou in the manner described above for at least the purpose of manufacturing high density, multi-metal layer semiconductor devices with design features of 0.25 μm or less.

Conclusion

➤ The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shields (US Pat. No. 6,084,290 and 6,083,850) discloses that is well known in the art to fill metal gaps with SOG, which is baked and planarized by CMP (see BACKGROUND). Huang et al. (US Pat. No. 5,747,382) disclose two-step planarization process using CMP. Peschke et al. (US Pat. No. 5,663,107) disclose global planarization using self aligned polishing. Allman et al. (US Pat. No. 5,312,512) disclose global planarization using SOG and CMP.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to José R. Díaz whose telephone number is (703) 308-6078. The examiner can normally be reached on 8:00 - 5:00 Monday through Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JRD

November 13, 2001

A handwritten signature in black ink, appearing to read 'Eddie Lee', with a large, sweeping initial 'E'.

EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800